



## Non-Structural Mitigation - Earthquake

### Full Mitigation Best Practice Story

#### *Thurston County, Washington*

**Olympia, WA** - On February 28, 2001, Mrs. Mallinger was at home when she felt shaking and realized that there was an earthquake. During the two phases of the earthquake, books, glassware, CDs, pottery and some pictures fell. The power and water to her home did not shut down but the telephone was out of service. When Mrs. Mallinger was able to check her home more thoroughly, she found that the shaking had been severe enough to cause a ceiling light fixture in the garage to fall, and new cracks in the foundation.



The Mallingers water heater was several years old and needed to be replaced. During installation, earthquake strapping was recommended by the installer. The Mallingers agreed, and flexible gas lines were installed and metal strapping was used to secure the water heater to the wall studs.

Four years after the securing of the water heater, the Olympia area was shaken by a 6.8 magnitude earthquake. The shaking was severe enough at this house to cause items to fall from shelves, a ceiling light fixture to fall, and the foundation to crack. The simple preventative action taken to secure the water heater, at a cost of about \$10, protected a home valued at \$250,000 from fire. The Mallingers also have earthquake insurance.

Knowing that the water heater strapping prevented the chance of fire gave the Mallingers great peace of mind. As a result, they recommended to their neighborhood homeowners' association that all homes in the neighborhood secure their water heaters. This initiative will further protect the community and create a greater level of survivability in the event of future earthquakes.

#### Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region X**

State: **Washington**

County: **Thurston County**

City/Community: **Olympia**

### Key Activity/Project Information

Sector: **Public**  
Hazard Type: **Earthquake**  
Activity/Project Type: **Retrofitting, Non-structural**  
Activity/Project Start Date: **01/1997**  
Activity/Project End Date: **02/1997**  
Funding Source: **Private funds**  
Funding Recipient: **Property Owner - Residential**  
Funding Recipient Name: **Homeowner**

### Activity/Project Economic Analysis

Cost: **\$10.00 (Actual)**

### Activity/Project Disaster Information

Mitigation Resulted From Federal  
Disaster? **No**  
Value Tested By Disaster? **Yes**  
Tested By Federal Disaster #: **No Federal Disaster specified**  
Year First Tested: **2001**  
Repetitive Loss Property? **Unknown**

### Reference URLs

Reference URL 1: **<http://neic.usgs.gov/>**  
Reference URL 2: **<http://emd.wa.gov/>**

### Main Points

- The Mallingers water heater was several years old and needed to be replaced. During installation, earthquake strapping was recommended by the installer.
- The simple preventative action taken to secure the water heater, at a cost of about \$10, protected a home valued at \$250,000 from fire.
- Knowing that the water heater strapping prevented the chance of fire gave the Mallingers great peace of mind.